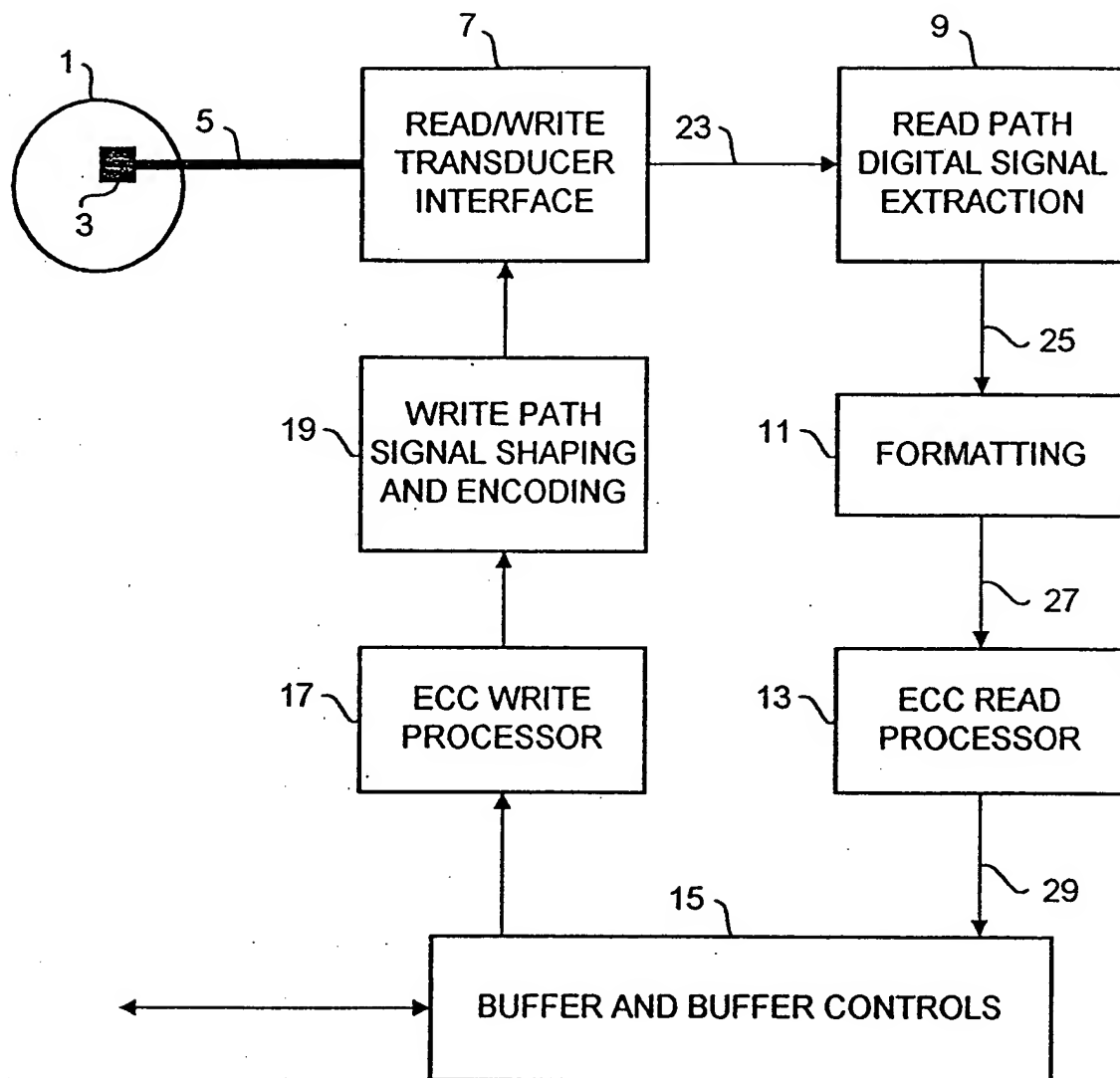


2004-05-04



PARTIAL READ AND WRITE PATH DATA FLOW
IN A DIRECT ACCESS STORAGE DEVICE

FIG. 1
(Prior Art)

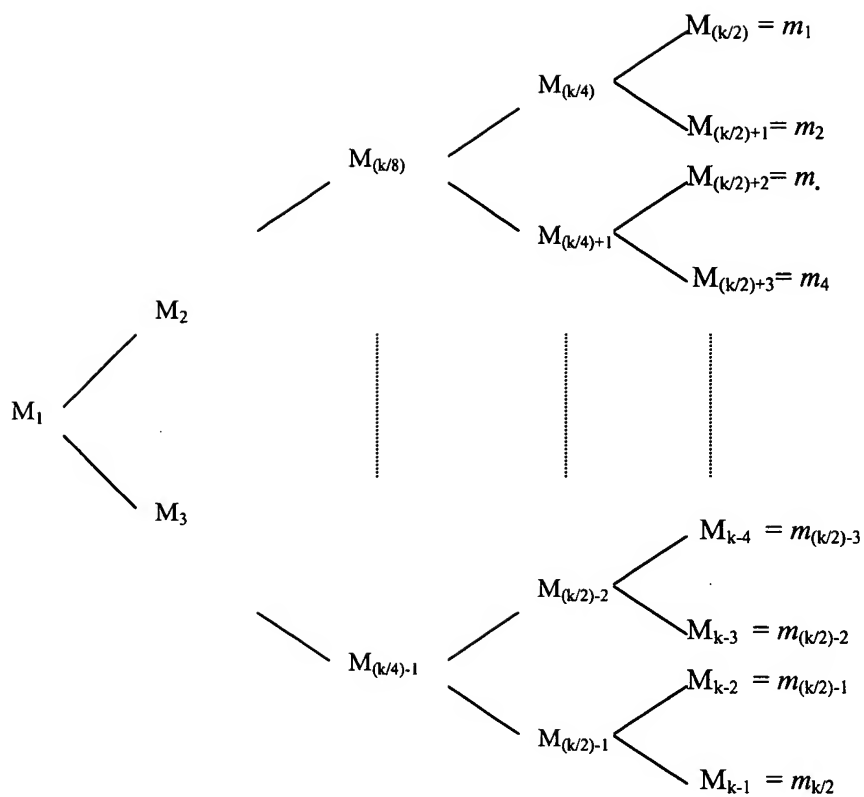


FIG. 2

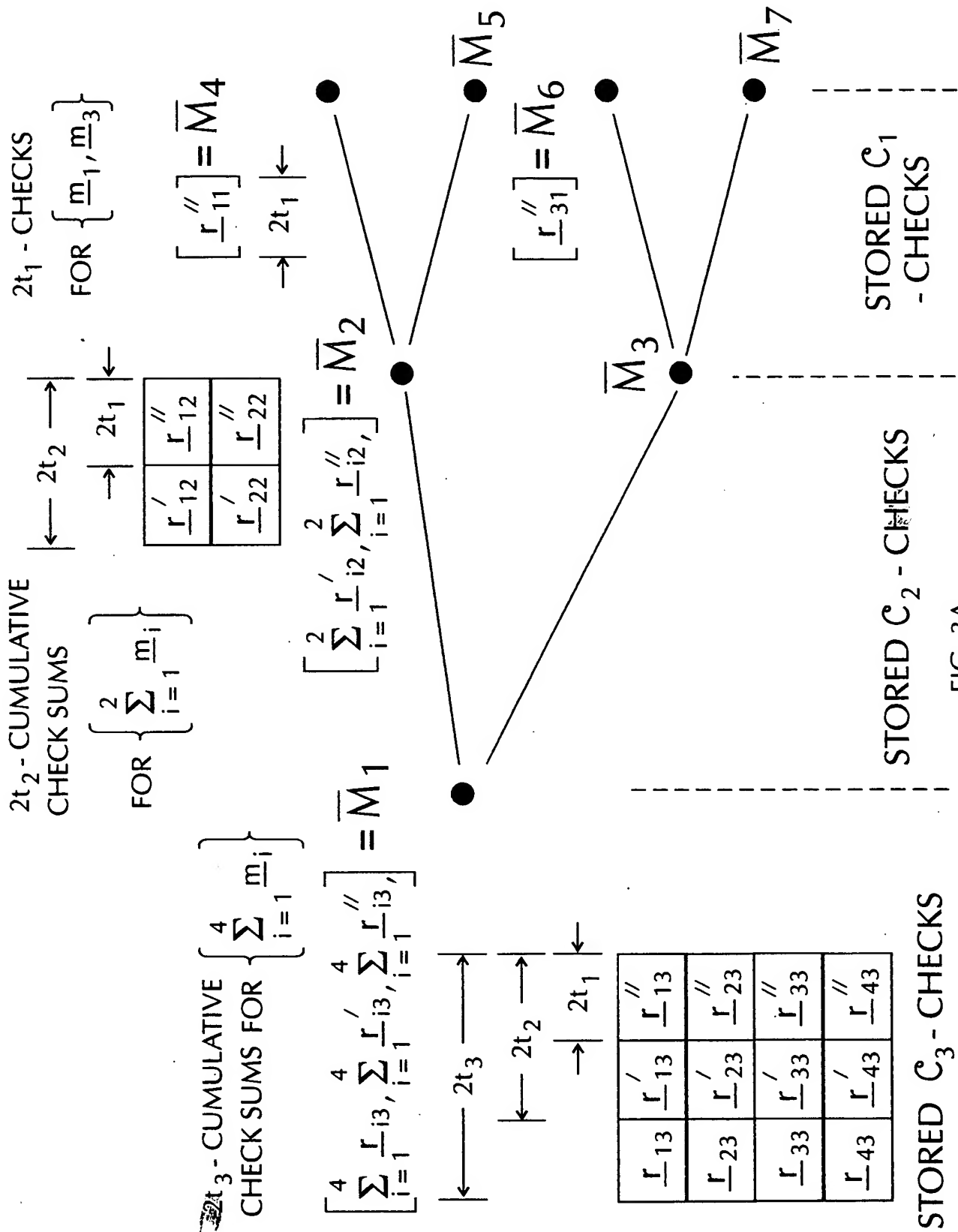


FIG. 3A

MULTI-LEVEL ENCODER

CHECK EQUATIONS

$$\bar{M}_4 = \boxed{r_{11}''}$$

$$r_1 \Rightarrow \boxed{m_1 \quad r_1}$$

$$r_1 = r_{11}''$$

$$\bar{M}_2 = \boxed{\sum_{i=1}^2 r_{i2}' \quad \sum_{i=1}^2 r_{i2}''}$$

$$r_a \quad r_2 \Rightarrow \boxed{m_2 \quad r_a \quad r_2}$$

$$r_a = \sum_{i=1}^2 r_{i2}', \quad r_2 = r_{11}'' + \sum_{i=1}^2 r_{i2}''$$

$$\bar{M}_6 = \boxed{r_{31}''}$$

$$r_3 \Rightarrow \boxed{m_3 \quad r_3}$$

$$r_3 = r_{31}''$$

$$\bar{M}_1 = \boxed{\sum_{i=1}^4 r_{i3}' \quad \sum_{i=1}^4 r_{i3}''}$$

$$r_c \quad r_b \quad r_4 \Rightarrow \boxed{m_4 \quad r_c \quad r_b \quad r_4}$$

$$r_c = \sum_{i=1}^4 r_{i3}', \quad r_b = \sum_{i=1}^2 r_{i2}' + \sum_{i=1}^4 r_{i3}'$$

$$r_4 = r_1 + r_2 + r_3 + \sum_{i=1}^4 r_{i3}''$$

$$\underline{C_1 \subseteq C_1}$$

$$\underline{C_2 \subseteq C_1}$$

$$\underline{C_3 \subseteq C_1}$$

$$\underline{C_4 \subseteq C_1}$$

$$\boxed{m_1 \quad r_1}$$

$$\boxed{m_2 \quad r_a \quad r_2}$$

$$\boxed{m_3 \quad r_3}$$

$$\boxed{m_4 \quad r_c \quad r_b \quad r_4}$$

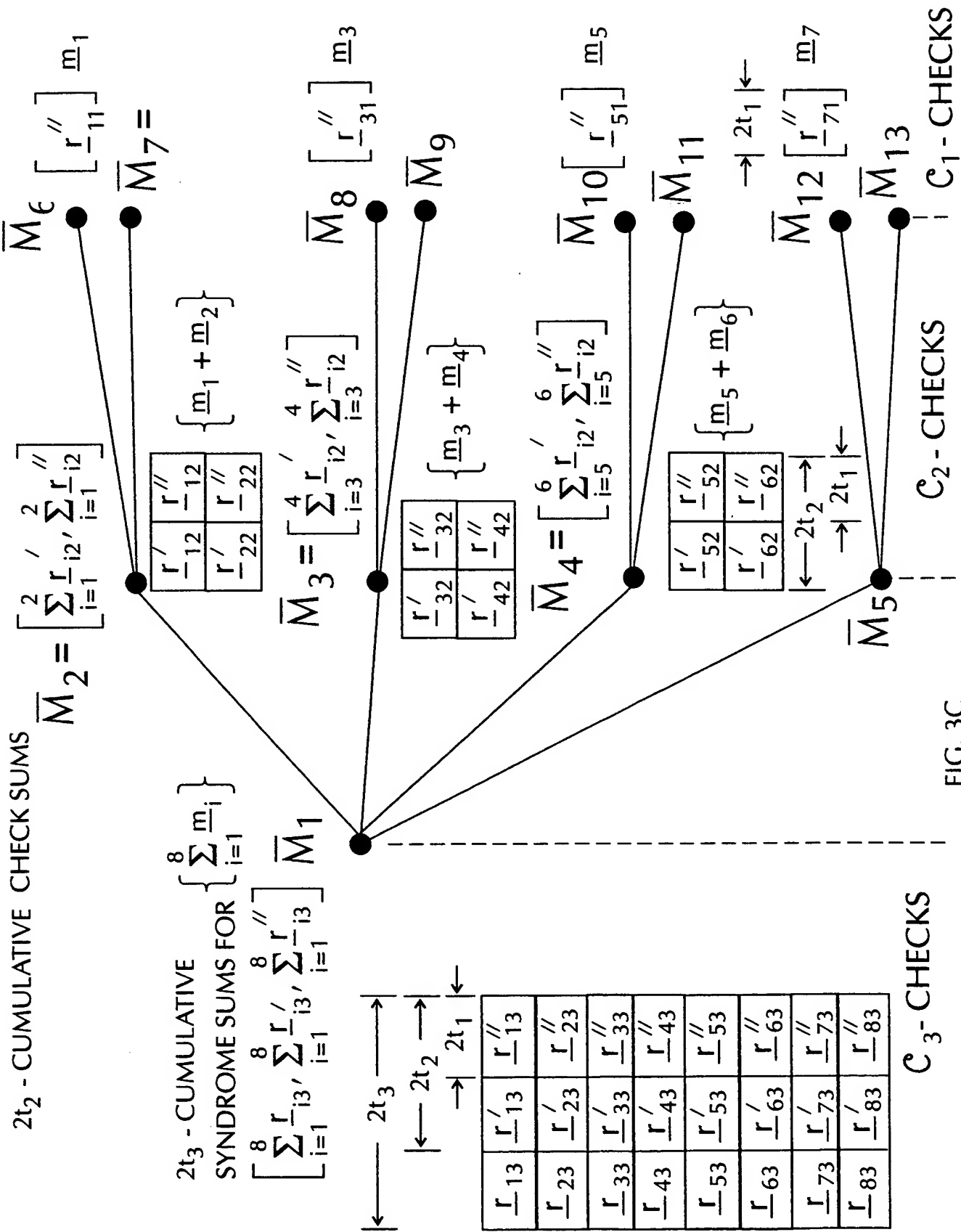
$$\underline{C_1 + C_2 \subseteq C_1}$$

$$\underline{C_3 + C_4 \subseteq C_2 \subseteq C_1}$$

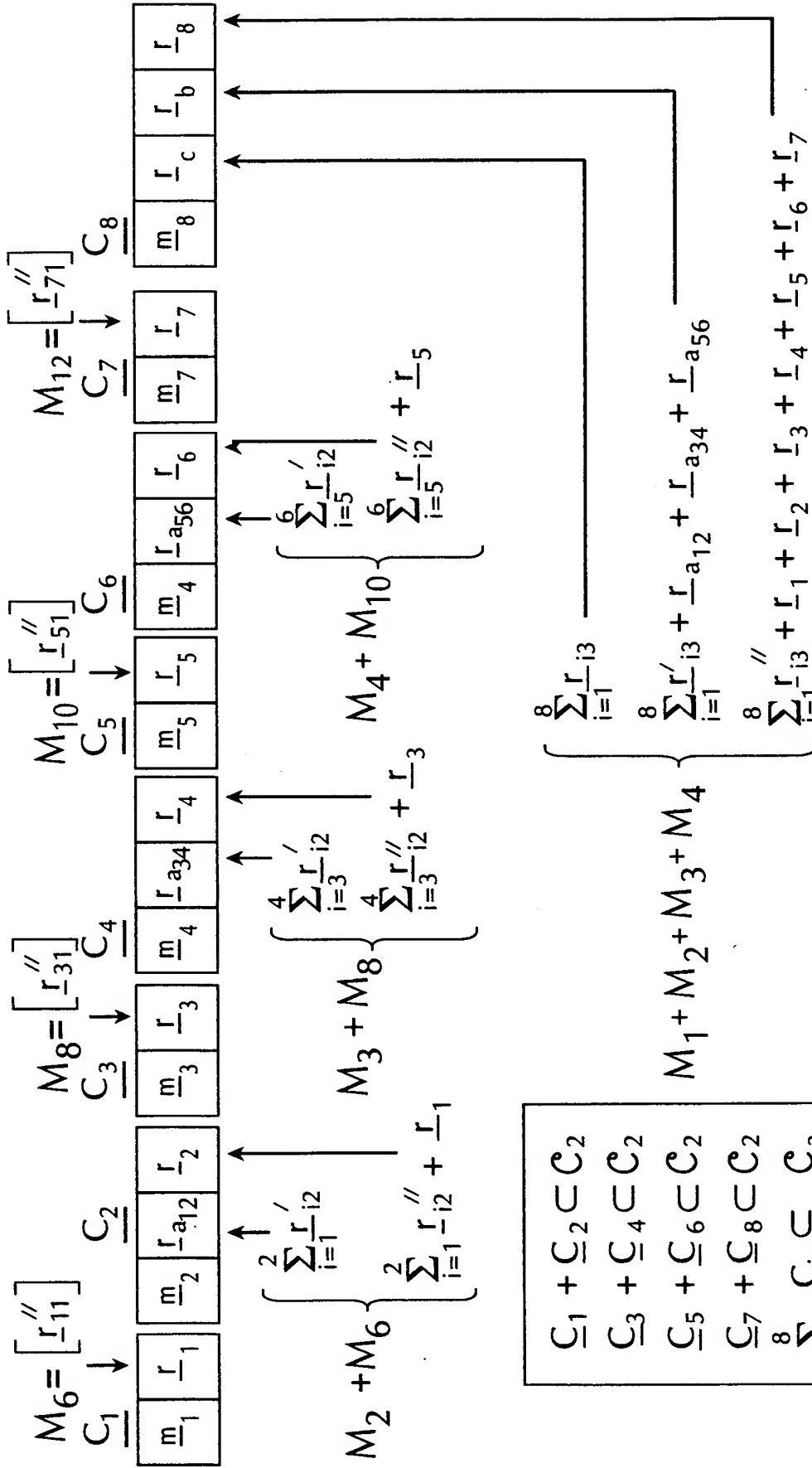
$$\underline{C_1 + C_2 + C_3 + C_4 \subseteq C_3 \subseteq C_2 \subseteq C_1}$$

INTEGRATED
4-SECTOR
FORMAT

FIG. 3B



MULTI-LEVEL ENCODER CHECK EQUATION



INTEGRATED 8-SECTOR FORMAT

$$C_3 \subset C_2 \subset C_1$$

FIG. 3D

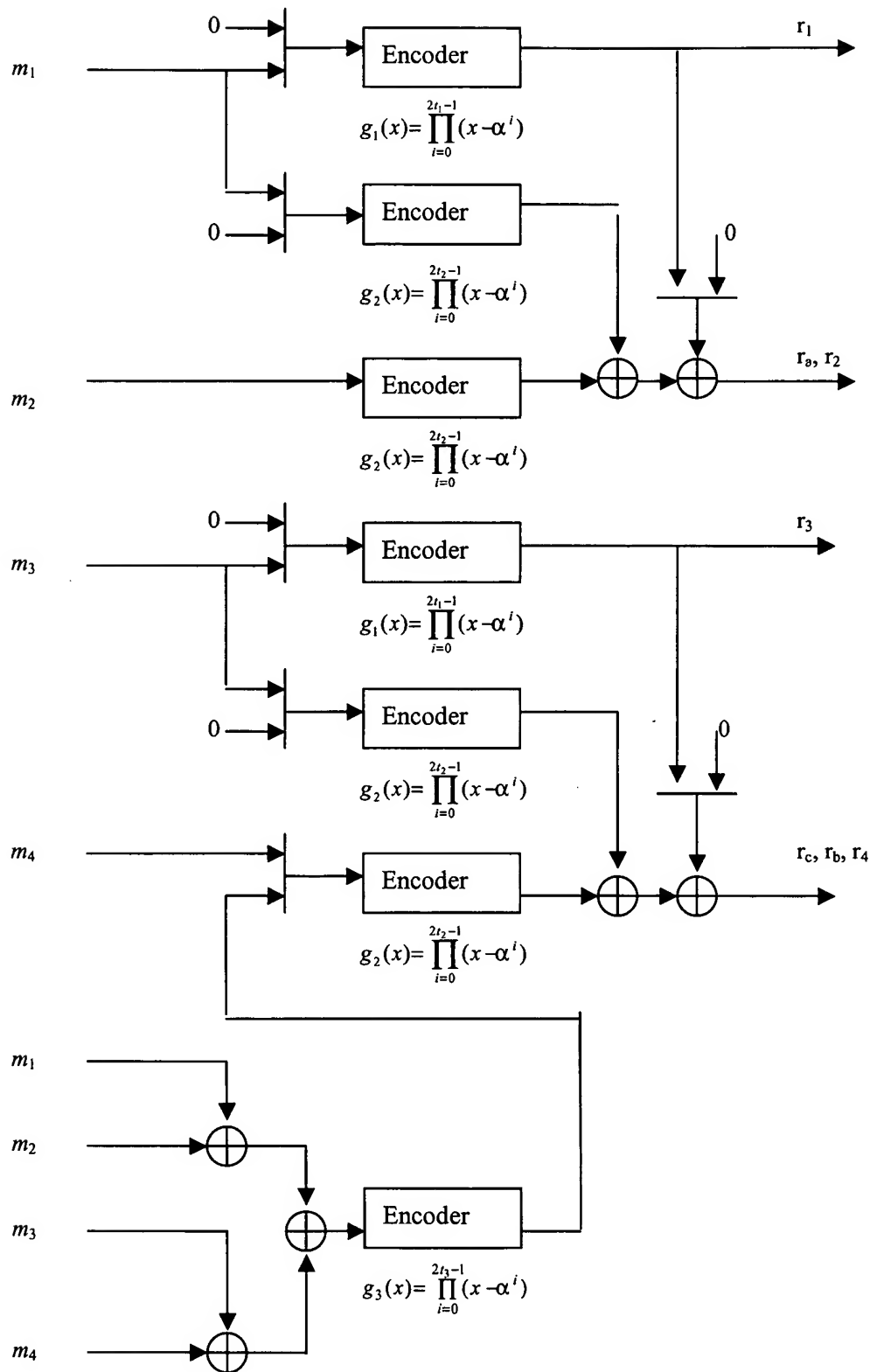


FIG. 4

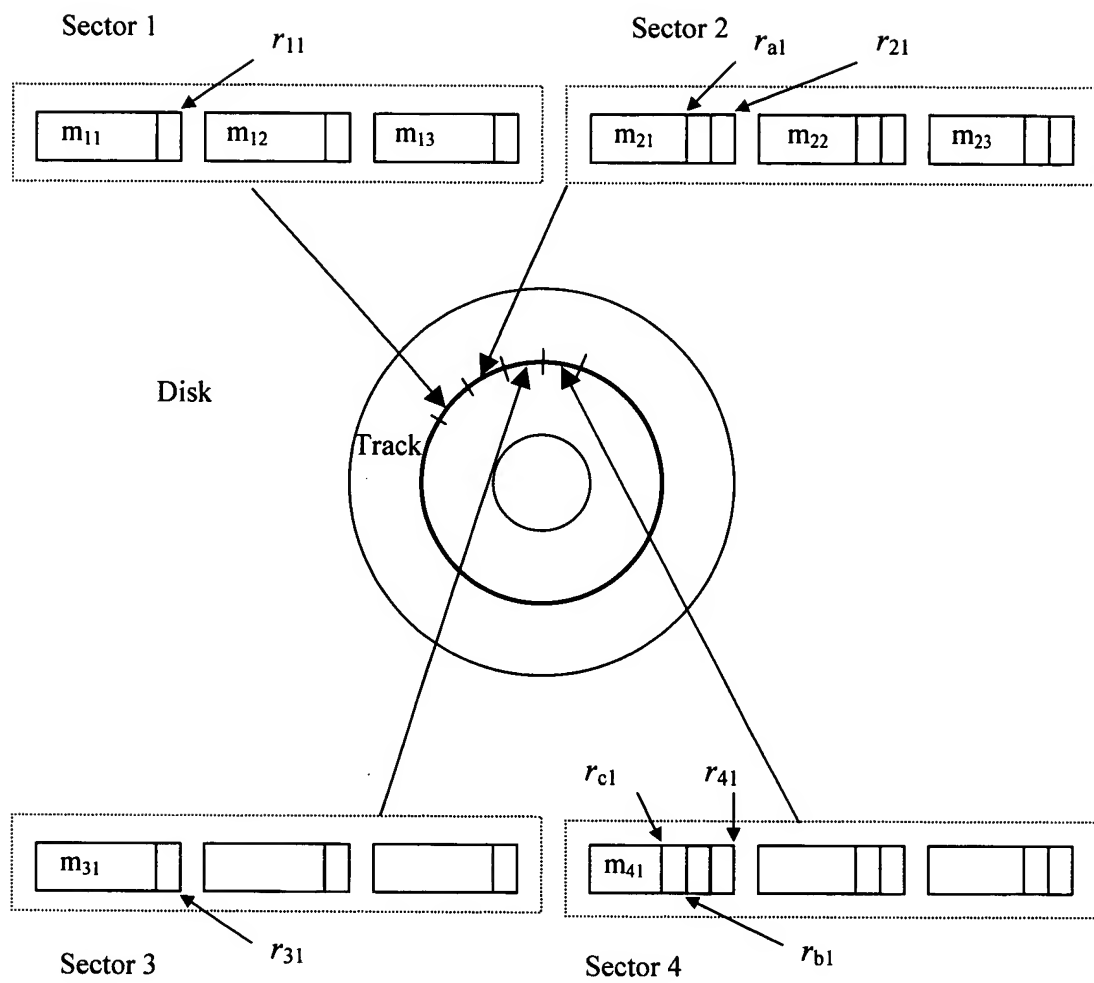


FIG. 5

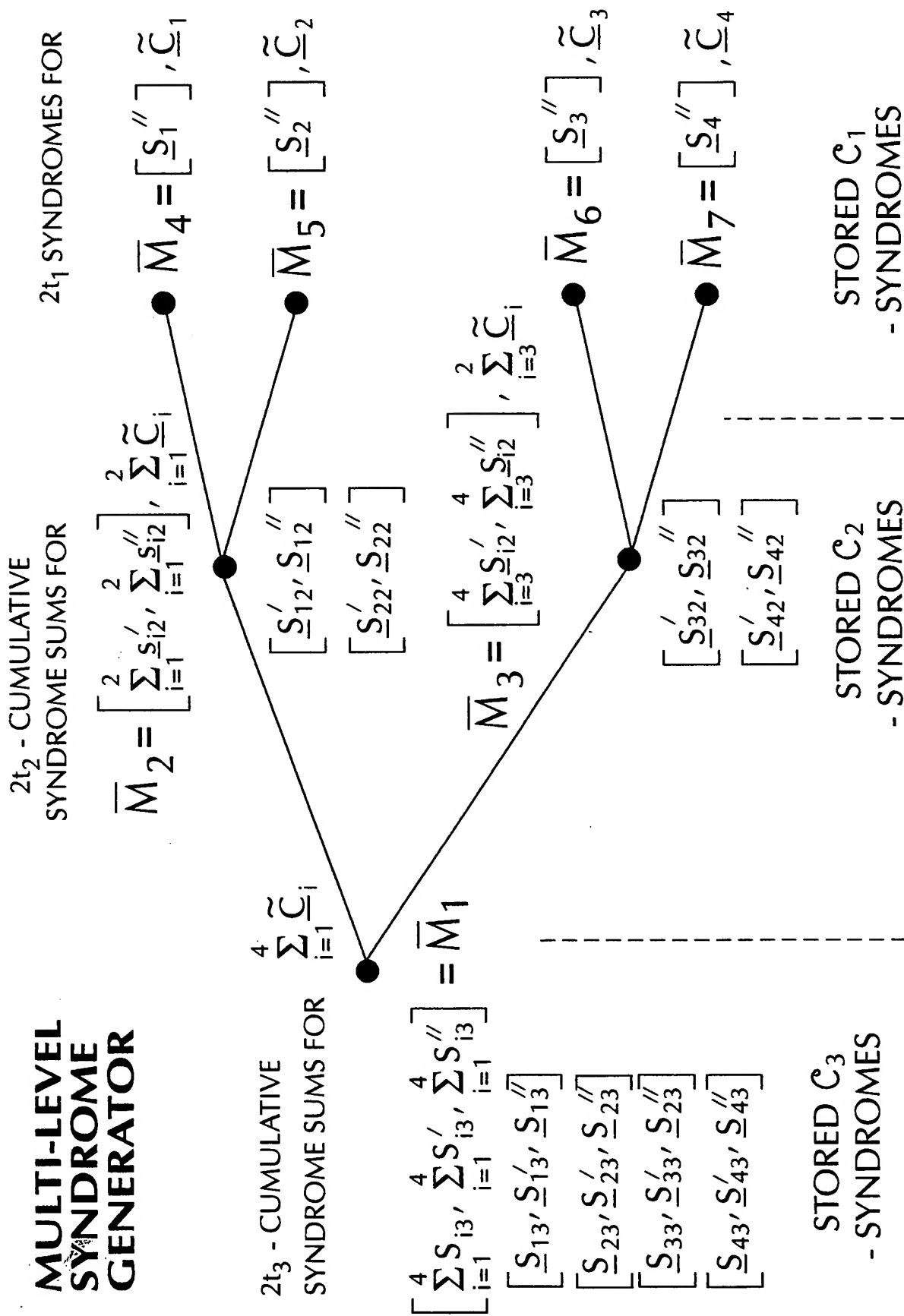


FIG. 6

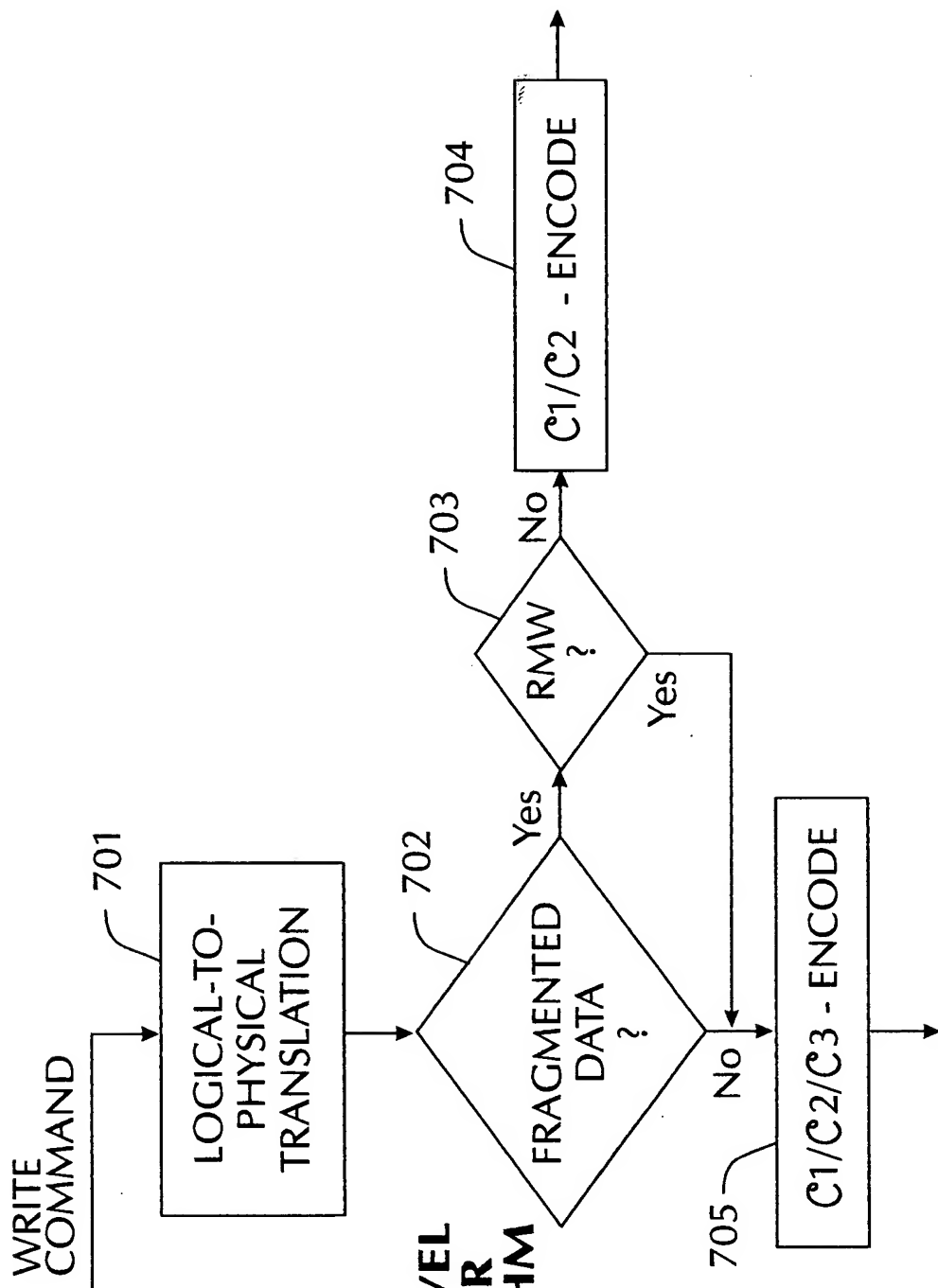


FIG 7
MULTI-LEVEL
ENCODER
ALGORITHM
700

FIG. 8
MULTI-LEVEL
DECODER
ALGORITHM
800

